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ABSTRACT

This report presents results from Phase 1 of the British Columbia Library Network (BCLN) Project, which included the installation and evaluation of a comprehensive library cataloging system using the University of Victoria Computing Center IBM 4341 computer. Evaluation included actual use of the system, performance and cost studies, feature and operational review, and the development of an implementation plan. The question of proceeding with BCLN to full implementation was considered in the light of several factors: the alternative of continuing with the present supplier (UTLAS); features and facilities in BLIS (the package system selected for the BCLN pilot) as compared with UTLAS; current and future financial and service options with a BCLN implementation; and budget implications for the participating libraries. Despite the interest in BCLN and its demonstrated feasibility, it was judged to be not possible to proceed to full implementation because it would require a financial commitment over an extended period that could not be considered within the current financial climate. (THC)

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BRITISH COLUMBIA LIBRARY NETWORK

FINAL REPORT

PHASE 1 IMPLEMENTATION

Prepared by

R.W. MacDonald

with assistance from

BCLN Project Staff

University of British Columbia Library

January 31, 1984

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Paul Baldwin	SFU Library
Bob Campbell	UVic Library
John Campbell	UBC Library
Lynn Copeland	UBC Library
Don Dennis	UBC Library
Gerry Dobbin	UBC Library
Pete Edgar	UBC Library
Laurie Fredericksen	VCC Library
Bruce MacDonald	UBC Library
Bill Ng	UBC Library
Brian Owen	UBC Library
Bill Pelletier	UBC Library
Paula Pick	BCIT Library
Kathleen Pitt	UBC Library
Dave Stothard	UVic Computing Centre
Ann Turner	UBC Library

Many of the above people worked on specific tasks as well as assuming responsibility as a task manager for a particular function.

In addition, there was tremendous support provided by Biblio-Techniques, in particular Clay Burrows, Rick Woods, Sandee Howard, Jackie Rudeen and Vicki Mercer; also, from WLN on a contract basis for training, Erlene Rickerson.

If I have missed anyone, I apologize. To everyone who worked on BCLN my sincere thanks and appreciation.

R. W. MacDonald

Project Manager, BCLN Phase 1

1. EXECUTIVE SUMMARY

The foundations of BCLN lie in years of discussion and study among post secondary libraries concerning the idea of a provincial system that would benefit all libraries. BCLN Phase 1 represents a culmination of a great deal of work and money, spent in deciding what to do, and then ultimately doing it on a trial basis by installing a system, using and evaluating it.

Very simply, the end result of this project is that the system selected and actually installed proved to be better than the services now used, also to be 'affordable' in the context of having at least six participating libraries able to commit to spending at 82/83 levels for cataloguing and acquisitions support. Unfortunately, because of the current budget restraint implications none of the libraries are willing, or able, to commit to a BCLN implementation. Rather, most will be seeking ways to reduce the costs for cataloguing support and to find other ways to maintain library services at less cost.

Therefore, for budget and financial reasons, BCLN will not proceed. One consequence is that the idea of a provincial development will likely be replaced by a number of institutional solutions that will vary from one to another. Further, because some libraries will inevitably pursue local or in-house solutions, the continuation of the B.C. Union Catalogue becomes questionable. This shift to an institutional viewpoint will impact on the procedures and opportunity for resource sharing among libraries. The cost of separate and local solutions may not be less expensive or 'better' but they will almost certainly present difficulties for patrons using more than one library, and for interaction between libraries. Some libraries may also have difficulty deciding what solution or approach should be taken, because of a lack of technical expertize.

2. RESULTS AND RECOMMENDATIONS

The BCLN Phase 1 Project completed the installation and evaluation of a comprehensive library system using the University of Victoria Computing Centre IBM 4341 computer. Evaluation included actual use of the system, performance and cost studies, feature and operational review, and the development of an implementation plan. The question of proceeding with BCLN to full implementation was considered in view of several factors; the alternative of continuing with the present supplier (UTLAS): features and facilities in BLIS as compared with UTLAS: current and future financial as well as service options with a BCLN implementation: and the ability-to-pay, or more precisely, the budget implications for the participating libraries.

BLIS, the package system selected for the BCLN pilot, proved to be much as previously documented and generally better than, as well as cost competitive with, UTLAS. Further, the system showed the potential for future development for BCLN, in particular to obtain an on-line public acess catalogue, along with an acquisitions/fund accounting subsystem.

Cost projections for a BCLN operation were developed for a minimum configuration of users, which comprises six libraries: three universities, two colleges and one institute. This minimum is based not on the number of libraries, but the amount of use and level of expenditure. There could be substitutions of other libraries. Projections of revenue and expenses for BCLN were made, based on 82/83 levels of library expenditures and on current equipment and financing costs, as well as staff salaries. The plan included all costs of operating the system but did not include recovering expenditures already made on prior studies and the BCLN Phase 1 portion. The accruals from expenditures made for Phase 1 are included. Economic feasibility is reached with the full participation of six libraries, using the system at the 82/83 level of activity. Additional participants, and expanded services easily enhance the viability of BCLN.

The results and findings argue for continued implementation, with the qualification that there is a minimum level of participation which is critical to obtaining a viable enterprise. Continued implementation was proposed but qualified with the reality of the emerging financial exigency among the participants.

The proposal to continue was considered by the participating library directors at a time when budgets for 1984/85 are uncertain and anticipated to be less than previous years. Despite the interest in BCLN, and the demonstrated feasibility, it was judged to be not possible to proceed to full implementation because that would require a financial commitment over an extended period that could not be considered within the current financial climate.

Results & Recommendations ... 2.

The directors therefore decided that plans to proceed with BCLN would be set aside, but a report of this conclusion would be provided to each administration and to other appropriate agencies.

3. HIGHLIGHTS OF MAJOR TASKS FOR PHASE 1

3.1 DATA BASE PREPARATIONS

Approximately 1,000,000 records for the five participating institutions were obtained from UTLAS. The cutoff date for the load was Mar.18,1983. An additional 28,000 RECON records were held in local UBC files. The music records and UBC authority records were not processed because of the system's inability to handle these at the present time. The rest of the records were compared to identify matching records in different library files. Matches were done on the basis of title,date and country of publication, form of material and standard numbers (LCCN,ISBN, ISSN and NL). A base record was chosen among matching records, and the holdings for all the matches, and some bibliographic data, concatenated with this base record. Because the BCLN edit procedures control code values, subfield codes and indicators whereas UTLAS does not, considerable automatic 'cleanup' was performed on the data to prevent future problems. The cataloguers agreed that LC MARC codes, augmented by CAN MARC codes should be used. There was a need to provide for the loading of updates to the initial data base. This was said by Biblio-Techniques to be in place, but never tested.

There were some problems with missing records from UTLAS. These have now been resolved. Because of the speed of implementation, an error in programming appears to have resulted in some matches not occurring when they should have. If BCLN goes ahead, this should be corrected. Because the number of records continues to grow at approximately 20,000 records per month, if BCLN implementation goes ahead, it will be necessary to re-process the files.

3.2 DATA COMMUNICATIONS

The data communications network for BCLN was developed using the UBC Library minicomputer systems (DEC PDP 11/34), software now used by UBC for communications, and new software developed by UBC Library to support the BCLN operations.

The largest part of this development was to produce software that would emulate the IBM 3270 protocols as used with the BLIS package, and to utilize this emulation to drive TeleVideo 950 terminals located in the libraries.

The physical network comprised leased telephone circuits to each site, statistical multiplexors to support from 1 to 8 terminals, with the minicomputer in the centre and the UVic IBM 4341 computer as the host for the application.

Communications methods included synchronous and asynchronous. The connection to the UVic computer required synchronous communications to carry the 3270 protocols (actually bisync). Connections to each terminal are all asynchronous. All terminals were operated at 2400 baud, and the main link to the host at 4800 baud. The main link would have to be operated at a higher data rate to support the full operation of the network, and may also demand a second line to cope with the traffic as well as provide backup.

The TeleVideo 950 terminals function in character mode generally, but in block mode when communicating with BLIS. This change was effected from the mini by software - the operator did not need to change any switches. There are other terminals that can be supported in this manner, however, the pilot implementation did not attempt to use others because of time limitations.

Other terminals can also access BLIS in character mode. This includes any 'ASCII' type terminal connecting to the UBC library minicomputer, using a dial-in connection, hard-wired, through Datapac or the UBCNet. The character mode support does not provide for all of the functions of BLIS and would be used mainly for search-only. It is feasible to implement the other functions, such as for cataloguing work, but this would require developing the software to do this.

The costs for the network are described on the following page.

Network costs

Leased Lines		
UBC to UVIC	604 mo	
UBC to SFU	498	
UBC to BCIT	245	
UBC to VCC	196	
UBC to KW	300 est.	
	1,843	
Subtotal - nominally		1,900
Dataroute circuits to UTLAS		
3 at 400		1,200
Data communications multiplexors		
Capital cost $ 59,000		
3 yr lease* - 1,814.25 incl. tax 1,941.25		1,942 mo
Minicomputer facilities		
Capital cost $ 20,000		
3 yr lease* - 615.00 incl. tax 658.05		658
Mini maintenance costs		400
TOTAL costs		6,100

Terminals

UBC	10
UVIC	3
SFU	3
VCC	2
BCIT	1
KW	2
TOTAL	21

Communications cost per terminal 290.47 mo

Communications charge per terminal 300 mo.

* Note - lease costs based on University rates obtained from First City Capital Ltd; 3 yr term, no residual balance, monthly payments, rate of $ 30.75 per thousand/per month.

3.3 BLIS INSTALLATION AND DEVELOPMENT

Installation of BLIS at the UVIC computing centre was completed by Biblio-Techniques, Inc. staff, mainly from a remote terminal in Olympia. Some parts of the system were installed quickly and without problems, but there were substantial delays in providing an operational system because some components of software were either incomplete or not yet integrated with the basic WLN software. In addition to software problems, there were delays in loading definition tables, notably the location tables for the BCLN libraries. These proved to be essential for many parts of the system; without them, many functions did not work.

The core of the package, the WLN software, appeared to be installed and working quickly and easily. However, this did not provide a working system without the other parts, which were being developed and/or tested by Biblio-Techniques. The particular components of most significance were the location tables, the software for using numeric tags in displays (from Missouri), and the Local Holdings Subsystem.

In addition to some components not working, or not working together with other parts of the system, the Local Holdings system was a new and untested component. The first version of this subsystem contained some features which were considered unsatisfactory by BCLN and steps were taken to provide Biblio-Techniques with suggestions for change and improvement, which were accepted but required modifications to the software. BCLN project staff considered the changes critical for full implementation but the first version could be used for benchmark testing once made operational.

Database loading for BCLN represented a new requirement for the system, in that an existing data base of nearly a million records was to be loaded, checking against the WLN authority data and modifying access 'headings' in the process. This load process required some adapting of existing WLN software, which resulted in some problems that proved to be easy to fix but difficult to isolate. This caused further delays to obtaining a working system.

The combination of new software, problems with integrating several components of software, and other modifications to software, proved to be a poor combination for accomplishing work on schedule. To make matters worse, Biblio-Techniques seemed to be significantly short of staff time to find problems and make changes. Together, the end result was substantial delays in getting the system and data bases to the point where training could proceed in a reasonable way, and to plan for performance testing.

The BCLN schedule made allowances for time to install and make-ready a complex library system, but the problems encountered

with the installation were far more time-consuming than anticipated, and generally not trivial in nature. BLIS was very definitely not a 'turn-key' system at the beginning of the BCLN implementation.

3.4 TRAINING

Training in the use of the BCLN system started shortly after the test database was made available. Each institution designated two of its cataloguing staff members as "trainers", whose task it would be to learn to use the system themselves and then teach it to their colleagues. Work began on May 11, 1983, when Biblio-Techniques introduced the trainers to the rudiments of searching on BCLN. UBC made available two computer-assisted instruction courses which covered the simpler types of search, and the newly updated WLN Inquiry Reference Manual became an invaluable aid as the trainers progressed.

Biblio-Techniques held more training sessions during the week of May 23, to introduce the cataloguing and authority systems. Both the documentation and the training materials were inadequate from this point on. The WLN documentation understandably reflects that organization's policies and procedures. The BLIS version of the WLN system is in some respects different from the original; for example, the holdings subsystem for BCLN is an entirely new development. BCLN's policies also differ from WLN's; for example, BCLN assigns responsibility for authority maintenance to the member institutions, rather than to a central office. As a result, procedures had to be pieced together from the existing manuals, supplemented by experimentation on the system and information gleaned from Biblio-Techniques and UBC Systems Division staff. Training materials had to be developed by the participants themselves. This was made more difficult by the instability of the system, which was still being assembled and tested at the time. Nevertheless, the trainers learned to use the system well enough to carry out benchmark testing in August, and some of their colleagues learned enough of the procedures to participate in that testing also.

Despite the initial problems, more than fifty staff members were trained in searching and editing procedures and became reasonably familiar with a comprehensive and somewhat complex system.

If BCLN goes ahead, much greater emphasis should be placed on developing adequate documentation and training programs.

3.5 SOURCE BIBLIOGRAPHIC DATA

There are several methods available for providing 'source' bibliographic data for use with the BLIS system. The alternatives divide into two types, loading and maintaining the data on the BLIS system, and obtaining data from other systems as required. The BCLN project attempted to determine the feasibility of using the latter type, of acquiring data on demand rather than storing a large number of records, many of which may never be used.

The methods for acquiring data on demand are limited by the services available from other systems and the support available locally. Three specific approaches were examined;

- batch record transfer from UTLAS
- on-line record transfer from UTLAS
- batch record transfer from the National Library of Canada

The costs for each method varies, with the least expensive being the batch transfer from the NLC MRDS service. Experienced costs with the UTLAS approach and their standard charges obtains a unit cost of about $ 2.00 per record. The on-line method doesn't change this cost significantly, but makes the data available much sooner.

Support for acquiring records from UTLAS using an on-line transfer method was developed and tested during the project. This support was obtained by extending an existing support facility used by UBC to obtain print-outs of UTLAS records, such that data captured and directed to a printer is copied to magnetic tape instead. This method was discussed with UTLAS at the beginning of the project, and although the specifics of special charges were not determined, it was indicated that UTLAS would respond to a proposal for using this method for the 'volume' acquisition of data from their data base. During phase 1, the standard charges would apply. No further discussion of this has occurred, and before any final method is selected, this should be considered.

Another source of bibliographic data is the Washington Library Network (WLN). The contract for BLIS includes a requirement for a file sharing agreement between BCLN and WLN. This has not been finalized, but a draft version was prepared by WLN. There is a need for further discussion on this including the question of costs. From the initial draft, the costs for obtaining data from WLN will be similar to that from UTLAS; about two dollars Canadian.

The alternative to obtaining all records from another system, is to obtain and load all or part of the available MARC records from LC, CanMarc, etc. The relatively high cost of acquiring records from WLN or UTLAS (of $2.00 each), would significantly impact on the unit cost of operating BCLN, and some less expensive arrangement appears to be important. Assuming that a

reduced cost per record cannot be obtained by special and lower charges, the alternative of subscribing to current and recent MARC records has been included in order to lower the procurement cost of data and to keep the unit costs for cataloguing at an affordable level.

There are other benefits from storing a portion of the available source bibliographic data on the BCLN facility;

- the file sharing agreement with WLN will require BCLN to maintain CanMarc records for exchange with the WLN records

- acquiring current MARC records will enhance and maintain the Authority data

- current MARC records can be used for current awareness services and collections work as well as for current cataloguing and acquisitions work.

The conclusion reached is that source records should be obtained through a number of methods, including batch and on-line transfer from other systems on a demand basis, storing current LC MARC records in BCLN (perhaps the current three years), and storing all of the CanMarc records. This would provide access to bibliographic records directly for the major proportion of current cataloguing, reference and collections activity. When not found directly on BCLN, then the other methods would be used as appropriate - on-line if needed quickly, batch if not urgent.

The number of records and costs for source MARC records are as follows;

Source	Qty/mo.	Cost/yr	Retro. cost	Qty records
CANMARC	2,000	350	805	180,000
LC MARC	15,000	1,450	2,000	540,000*
CAN NAF#	1,000	325	715	150,000
TOTAL	18,000	2.125	3,520	870,000

* Approx. 3 yrs. estimated - probably high.
\# NAF = Name Authority File

Note - the LC Name Authority File records should also be obtained.

3.6 WLN AUTHORITY DATA BASE

A copy of the WLN Authority Data Base was purchased to form the initial BCLN Authority Data Base. (See BCLN/IAC document no. 5 for the rationale behind this choice.) After some preliminary work to add more NLM cross-references and change multiple "see" references to "see also" references, the BCLN bibliographic records were loaded against this file. Whenever a name, subject, or series heading from an incoming record matched a heading in this file, the bibliographic record was linked to that authority record. Whenever it matched a cross-reference, the heading was "flipped" to the established form and linked. When there was no match, the heading was added to the Authority Data Base and linked. This operation worked smoothly, and required very little manual effort. Reports of "flipped" headings were checked to be sure the program was working correctly (it was), and a few more multiple "see" references were identified and changed to "see also's".

We encountered three problems with the authority system, all anticipated: not enough cross-references, lack of a "nesting" facility in the system design, and the treatment of series authority records.

The WLN Authority Data Base does not yet include all the cross-references in the LC Name Authorities file. This will be remedied in 1984, when WLN loads the LC authority file. Because the incoming bibliographic records contained a mixture of AACR2 and older versions of headings, variant forms of the same heading were added to the file whenever they failed to match a cross-reference. A number of these multi-version headings were cleaned up when they were encountered during the pilot project, and we found that the authority maintenance routines worked as advertised.

A few of the headings that required revision appeared repeatedly with different subdivisions. Each of these had to be revised individually, because a cross-reference will "flip" only a heading that matches it exactly; a subdivision is considered part of the heading and prevents it from matching a cross-reference for the heading without subdivision. "Nesting" the headings, as UTLAS does, would eliminate much of this tedious work, but the WLN system design does not include this feature.

Series authority record problems will be resolved in 1984 when the system is modified to accommodate LC's authority records. But meanwhile the system's present inability to accept a name/title reference for a series is a major deficiency. AACR2 requires entry under title for many series formerly entered under name/title. The system also lacks the note fields that would be used to record series treatment.

If BCLN goes ahead after WLN has converted its authority

system and loaded the LC authority records, we should obtain the new software and a new copy of the WLN Authorities Data Base to load against. (The overall improvement in data base quality would make it worth re-doing the NLM and multiple "see" reference work.) If BCLN goes ahead before these changes are made, we should negotiate with Biblio-Techniques to obtain the new software and the WLN programs to load the LC authorities records, and plan to do the conversion ourselves. In either case, we should plan to load the LC authorities records at BCLN, both the base file and the weekly updates.

3.7 DATA BASE LOADING

The matched records, together with attached holdings, were ready to be loaded into BCLN. Because of time constraints, only the 1979-83 imprints were loaded during the test period. During the load, headings which matched on references in the BCLN authority file were 'flipped'. A number of multiple "see" references were converted to "see also" references. These steps saved considerable manual work which otherwise would have been required.

The number of records rejected during the load by BCLN was small, and could, it is felt, be managed by manual correction. In particular bibliographic records were rejected because of multiple 300 fields, and missing 'a' subfields.

Some software problems which occurred during the load were eventually resolved. However, this slowed the process considerably. There were problems with loading the holdings (if one holdings line was rejected, all of them were; an empty subfield would cause a holdings line not to load). These have purportedly been resolved but they have not been tested. Generally speaking, the reporting on when what data was loaded, where the review records were located, what record numbers were assigned, and so on was poor. Further, review data sometimes wound up in the wrong file. Better control and reporting is essential. Biblio-Techniques feels a printer attached to the Telex terminal is necessary to resolve this problem; other alternatives, such as printing at UVIC, sending Envoy messages and so on do exist. There is a problem particularly with the holdings data, which does not get routed to a review file when rejected. Currently the plan is to return the rejected holdings records to be corrected, if possible, or reviewed at UBC. Ultimately, some on-line method through BCLN will be necessary to correct these records.

Another major problem is the speed of the load (about 1,000 records per hour). Biblio-Techniques proposes to make the necessary changes to the high-speed load in order that it may be used rather than the on-line load now being used. This would improve matters considerably, although it should be well tested before implementation takes place.

3.8 BENCHMARK TESTING

Five tests were conducted on the BCLN system between August 2 and October 5, 1983. They were intended to obtain time and cost information for processing on the system, and to give the users a chance to evaluate it as an alternative to the present cataloguing system, UTLAS. The tests employed real cataloguing and searching data, and were conducted on a portion of the real BCLN data base, which, by the end of the test period, consisted of the 1980-1983 imprints from the participants' UTLAS files (121,261 bibliographic records).

The data for the first and last tests were a representative mix of the participants' normal cataloguing workload. These tests were used to assess the UVic computer usage costs, as well as to obtain processing times. The remaining tests were limited to searching and derived cataloguing, and were used to evaluate the system improvement after modifications had been made.

The first, and most extensive, test took place during August. Four of the five BCLN institutions participated, and over 300 new titles were processed on the system. But Murphy's Law was much in evidence. Aside from the problems one could expect from a new, untested, and untuned system, such as slow response time and awkward procedures, there were unexpected delays in loading needed records and a major hardware failure that resulted in the loss of one week's work. The participants emerged from the test frustrated and disappointed, with a long list of complaints about the system. Chief among these was dissatisfaction with the response time, which adversely affected every aspect of the work. There was also much unhappiness with the printing facilities and the new holdings subsystem. The original input routine was pronounced unfit for practical use, with an average entry time per record of 31 minutes.

Fortunately, there were potential remedies available for nearly all of the difficulties. These were introduced over the next month, and the system was re-tested periodically. A series of three changes could be made to improve response time and system performance. These were introduced one at a time so that the impact of each one could be assessed. First, the UVic Computing Centre upgraded one of its processors, and at the same time, UBC Systems Div. staff replaced a failing multiplexor. The response time was re-tested using a variety of searches and compared with the searching results in the first test. There were dramatic improvements in both the response times themselves and the amount of variation in response times. The UVic Computing Centre then changed BCLN's priority on the system to equal that for its internal users, and the searching tests were performed again. The result: another dramatic improvement in consistency, as well as some further improvement in the response times themselves. As part of this test, we also performed and timed comparable searches on UTLAS. The LC card number search on UTLAS

was, on average, 4 seconds faster than on BCLN, but the amount of variation in response times was nearly double. Title searches were about the same on both systems. Record display on BCLN was over four times faster than on UTLAS, because of BCLN's faster data transmission speed.

While these improvements were going on at UVic, UBC Systems Division staff were addressing the printing problems by reprogramming the BCLN terminal (TeleVideo 950). This operation was a great success -- all the reported problems were overcome. Heartened by this progress, the UBC participants in the first study undertook a new test of derived cataloguing on the system September 12-14. Their average time of 3.7 minutes per record compares favourably with UBC's average derived cataloguing time on UTLAS (over 5 minutes per record), and represents a substantial improvement over the timings in the first BCLN test. But even more remarkable is the complete turnaround in the participants' feelings about the BCLN system. With the response time and printing problems no longer a burden, they were able to appreciate BCLN's special cataloguing features, such as full-screen editing, automatic error checking, and authority control.

Their comments this time were strongly positive. Biblio-Techniques made the third change to the system early in October, tuning it to reduce the load on the UVic computer's CPU. The fifth and final test was performed after this modification, on October 4-5. Like the first test, this one employed a representative sample of the normal cataloguing workload. Unlike the first test, it was conducted only by UBC participants and was much shorter (2 days instead of 8) because of the BCLN contract's imminent expiration date. The derived cataloguing times were about the same as those obtained in the September test, and the times for the other operations showed substantial improvement over their August counterparts. The time for the original input routine did improve, but it was still more than double the UTLAS time. An alternative procedure developed in August still appears to be a better approach. This involves keying the records into a local (UBC) file and then batch loading them into the BCLN database every evening. It is essentially the procedure used by the universities for RECON records. The keying time was checked and found to be slightly faster than original input on UTLAS. The unhappiness with the BCLN holdings subsystem was reduced but not eliminated by the response time and printing improvements. According to Biblio-Techniques, the permanent version of this subsystem will eliminate most of the remaining problems, but as it was not made available during the test period we have not been able to confirm that. None of the batch products were produced either, so we have been unable to determine whether the tape records, cards, and printed listings meet our requirements. CPU usage, and its associated charges at UVic, were reduced somewhat by Biblio-Techniques' tuning.

Benchmark testing ... 3.8

Looking back over the system's progress since August, we can be optimistic about its potential for cataloguing. But the holdings subsystem and batch products must be tested and pronounced satisfactory before we could reasonably consider implementing the system for regular cataloguing production.

3.9 COST/TIME DATA FROM BENCHMARK TESTS AND DATA BASE LOADING

3.9.1 Benchmark Tests

Benchmark tests were done on BLIS on 'controlled days' during August and October, where casual usage was suspended and only a select mix of work was performed to obtain cost as well as performance data. Eight days in August comprised the original set of tests. These were scheduled in three parts allowing time between to make system changes and measure improvements to response times. The changes to 'tune' the system included a higher priority level within the UVic facility, and expansion of memory space. These tuning changes should not affect the cost data to any extent. The results of this tuning is reported elsewhere and not repeated here.

An additional two days were scheduled in October for further tests on performance and cost, mainly because the costs and CPU times during the earlier tests were considered too high, making the system not affordable.

There was no facility available in BLIS to capture cost data for each session on BLIS, or for transaction analysis. A reporting package is available from WLN, but this was not installed during the Phase 1 implementation. The only provision for obtaining cost data was the UVic accounting reports, which show total costs for each day by rate factor. This enabled a study to be made of the total costs during the prime time for each day that benchmark tests were done. The reports also showed CPU minutes and EXCP counts (input/output). In addition, some statistics were captured by Biblio-Techniques, showing daily figures for Adabas and ComPlete activity. Also, the UBC minicomputer captured the 'logoff' statistics from the BLIS application system, which shows CPU times and EXCP counts for the application programs.

These various sources were examined together to ensure there was some correlation and therefore reasonable accuracy in the data. Although there was variation between the three sets of data, a relationship emerged and the figures were complementary; together providing data on the different components of BLIS. From this extra checking, it was determined that the UVic data could be accepted as a reasonable measure of the benchmark activity.

The last set of benchmark tests showed significant reductions in the CPU minutes with consequent cost reductions. It is important to note that the process of 'tuning' the system is not a one-time effort, and is required on a continuing basis, at least periodically as workloads change or computing resources are expanded. It is reasonable to assume that some further improvement in both performance and costs is possible. What is not known is the extent of improvement that is attainable. For purposes of planning for BCLN, the benchmark figures are used,

assuming improvements will be nominal.

The data obtained from benchmark tests is important for two purposes: to determine the cost of operating BLIS, also to scope the amount of computing capacity required. Costs are examined below in considerable detail, however, the capacity requirements for BCLN are reviewed first. The early indications from Biblio-Techniques was that BCLN would require roughly 50% of an IBM 4341 computer facility. That preliminary estimate appears to have been confirmed by the usage data from the benchmark tests. This information permits BCLN to forecast its needs in terms of the amount of time required on a shared facility, or on a dedicated facility.

Summary of statistics from benchmark tests

	Day 1-7	Day 8-9
Total CPU minutes	336.22	37.16
Total transactions	1661	400
Avge. CPU time/transaction	.202	.092
% change		- 54.5%
Total EXCP counts	525403	80948
Avge. EXCP count/transaction	805.83	716.35
% change		- 11.2 %
Total cost	1,861.54	716.35
Avge. cost/transaction	$ 1.12	$ .54
% change		- 51.8 %
Total new items processed	652	113
Avge. cost/new item	$ 2.855	$ 1.912
% change		- 33.1 %

Overall ratio of total transactions to new items for all test days was 2.69:1. Using this ratio and the transaction cost from the last tests, obtains an estimated cost per item of

$ .54 @ 2.69:1 = $ 1.452

The two methods of estimating costs give significantly different results. This difference is related to the varying mix of work between the tests, in particular an increased number of searches during the final test sets.

For purposes of cost projections, $ 1.912 per item cost will be used for the UVic computing alternative. This will ensure conservative estimates, further, there is not sufficient data to enable a transaction costing to be used.

Cost/time data from tests and loading ... 3.9

3.9.2 Database Loading

The computer costs for the processes of loading bibliographic records into BCLN was analysed by using load statistics provided by Biblio-Techniques and the billing statements from the UVic Computing Centre. Ten days operations were examined where 53,355 bibliographic records were loaded at a cost of $ 5,824.22. Some of this cost amount is attributable to other functions, however, the amount of other processing was not large and to be conservative the total is included in determining the unit costs for loading records. On this basis, the cost to load a bibliographic record came to $ .1091, and required .0294 CPU minutes.

The processes of database load included all the various steps of editing, matching, loading holdings records, etc. This was done with the standard load programs provided by BLIS, which was quite slow; on the order of one to two thousand records per hour. A 'fast load' program is available and Biblio-Techniques plan to modify this to cover all of the standard load requirements. It is not known if the fast load will be much less expensive, but it should at least reduce the elapsed time to load records.

For cost projections, the unit cost for loading BCLN bibliographic records was adjusted upwards to $ .12 per record to allow for contingencies, including the possibility of costs increasing as the database gets larger.

The cost projected for loading Marc source records was adjusted downwards because there is less processing involved and no holdings records to load. An estimated cost of $ .08 is used for projecting costs on the UVic facility.

Cost/time data from tests and loading ... 3.9

3.10 USER ACCOUNTING

The facilities for obtaining user accounting data were never installed. BCLN determined that the WLN support package would be acceptable by examining the 'output' and considering the policy issues. The specifics of the software were never examined in detail, however, it was established that the package would be available, also that the information generated was comprehensive.

3.11 FILE SHARING AGREEMENTS

A file sharing agreement between BCLN and WLN is included in the contractual requirement for obtaining the BLIS package. Suggestions for such an agreement were made by BCLN, discussed with staff at WLN, and a draft agreement prepared by WLN. The policy issues in this agreement were reviewed through the WLN Users Council and agreed to in principle, subject to consultation with the members generally. No further work was done on the agreement because of lack of time during the Phase 1 period, however, there were no apparent problems with the agreement or between the parties, and it was assumed this would be a formality to be completed when it was determined if BCLN would proceed to full implementation.

3.12 REFERENCE/ILL EVALUATIONS

When the system reached a point of being fully operational and cataloguing staff trained to use the system, training and documentation was prepared for reference and interlibrary loan staff. This focussed on the searching capability of the system and the public 'view' of the system and data base.

Staff from UBC primarily were included in this part of the evaluation, and the training provided for a basic understanding of the searching facilities in the system, and the potential for developing a 'user interface' that would be appropriate for reference and ILL purposes. Since the displays, documentation and other features of the system were mainly directed towards the cataloguing aspect of using the system, the public service view had to be considered as a future potential.

A separate report was prepared describing the results and evaluation of reference/ILL staff. There was a strong interest in the system, or more accurately in the prospect of having the catalogue data base accessible on-line. No major objections surfaced although some people without experience on UTLAS or other bibliographic systems found the command language complex. At the same time, some people experienced with using Dialog, CanOle and Orbit suggested that the search facilities be expanded to provide a number of features found in these systems.

3.13 ACQUISITIONS AND FUND ACCOUNTING SUBSYSTEM

This subsystem was not installed during Phase 1 and only Simon Fraser University Library spent any time looking at the features and documentation. SFU had planned to use and evaluate the acquisitions component but delays in installing the basic system did not allow for this.

4. ALTERNATIVES FOR CONTINUED IMPLEMENTATION

A critical requirement for continuing BCLN is to obtain adequate computing resources at an affordable cost. The Phase 1 Project started with an expectation that buying time as needed would be the least costly approach. That premise appears not necessarily correct, nor is it the 'best' approach, for a number of reasons. Accordingly, two alternatives are examined for continuing BCLN; one, buying time from the UVic Computing Centre, and two, a separate and dedicated computing facility operated by and for BCLN.

Although the initial plan for BCLN was to acquire source records from other hosts as required, the plan recommended is to load a portion of the available source bibliographic records into the BCLN facility. This approach should be less expensive because of the relatively high cost for acquiring records on-demand (2.00 each), and will provide other benefits also. (Discussed previously in section 3.5)

Charges for time on the UVic computing facility are based on the standard university rate schedule, with two exceptions for BCLN; the CPU time rate for BCLN is not adjusted as a function of the 'size' of the application - it is set at a fixed rate: and, the disk storage charges are not applied by the regular cylinder/day rates but are based on the actual cost of leasing the equipment plus an allowance for the centre's overhead. These exceptions were made after the accounting report for the beginning month of BCLN operations showed the costs were much too high. UVic adjusted the charging arrangements and credited BCLN for prior months.

The first series of benchmark tests showed the unit costs for computing time to be much higher than anticipated even with the revised charging rates, and too high for BCLN to be affordable. The improvements from tuning the system brought these costs down significantly. However, the CPU costs are still high by comparison with the special rates obtained by the Washington State Library for the operations of the Washington Library Network. These special rates were obtained from the Washington State University computing facility at roughly half of the regular campus rates. The rationale for this special arrangement is that the WLN operation requires computing facilities only and does not use or need the other services usually provided to regular users. WLN was also recognised as a large volume user. The policy was revised at WSU to recognize both large volume users and the limited support needs of applications such as WLN. This policy is not 'only' for WLN - any similar user can obtain the special rates on application.

Based on this information and an assessment of the need to obtain lower costs for BCLN operations, a request was made to the UVic Computing Centre administration to consider special rates

Alternatives for continued implementation ... 4.

for BCLN. The preliminary response indicated that it would be politically difficult to charge BCLN a lower rate than regular university departments. There was an indication that special rates might be considered if a submission was made by the University of Victoria Library. This has not been taken any further.

The University of Victoria Computing Centre experiences costs similar to other general purpose academic computing services, where the cost of 'people' needed to manage and operate the service accounts for a major part of the rate structure, typically on the order of 70%. That is, the charges for the actual computer facility comprise roughly 30% of the total. BCLN should not require the same level of operational staffing, since it would be a specialized installation, primarily with turn-key software, and with most usage of the system being on-line.

A separate BCLN computing facility appears to be a feasible alternative to that of buying time from an existing centre, mainly because of recent improvements in price/performance available from new systems and increased competition among vendors. The newly announced IBM 4361 would be an appropriate system for BCLN, along with the new large capacity disk storage devices. Both the 4361 and the 3380 disk are 'aggressively' priced giving much better price/performance than for example the IBM 4341 now used at UVic. The UVic computing centre plans to replace the 4341 with an IBM 4381 next spring, and will pass on the price/performance improvements to its users, however, since the cost of the computer accounts for only about 30% of the total charges, the reduced costs will be nominal.

In addition to the new systems such as the IBM 4361, a used system might also be considered. These can be obtained at a price that provides price/performance comparable with the new systems. The IBM 4341 to be released by UVic next spring may be a good example of this.

Although a separate BCLN installation may reduce costs and provide other advantages, it does require that BCLN get into the data processing centre business as an operator and not just as a user. The only option to avoiding this would be to have an existing centre (commercial or educational) provide the management and operational support on a contract basis. The specifics of this have not been investigated, rather an estimate of the people needed to operate a separate facility has been used to consider the basic feasibility of this alternative.

Alternatives for continued implementation ... 4.

5. SERVICE OPTIONS

The BLIS package provides support for a range of functions related to the processes of creating and maintaining a library catalogue. The data base and the systems that support it can be applied to the ultimate purpose for a catalogue, that of providing access to library users. BLIS has the foundations for this extension; what is needed is the specific implementation of an on-line catalogue access, in particular a better user interface.

In addition to the core requirement of the catalogue, there are related support services such as ILL searching, acquisitions and fund accounting. These can be considered for early implementation as BCLN services.

Also soon to become available with BLIS, is a circulation support module. It is questionable that BCLN should place this as a priority for implementation since many libraries already have in-house circulation systems or are planning for them. In addition, it is not clear that it would be economical to support this application on a large central computer.

The batch services of printing catalogue cards, producing COM catalogues, purchase orders, fund accounting reports, etc. must also be incorporated into the early service offerings of BCLN.

There are other support services included in the development plans for the WLN software, and these will become available to BCLN for implementation.

Beyond these basic BLIS or WLN developments, there are other opportunities for BCLN to deliver services to libraries, and to generate the revenues needed to sustain the BCLN enterprise. Some of these might include;

- brokering of bibliographic search services - several U.S. networks have successfully negotiated special rates for their members.

- electronic mail services - although much of this is in place via the efforts of the UBC Interlibrary Loan operation and the NET cooperative, it perhaps should be incorporated into the BCLN service complement. There is a potential to extend these services, such as to establish an interface with electronic message services available from CN/CP and obtain access electronically to the many libaries still using Telex and Teletype. (Some work has been done on this for the UBC minicomputer)

- increased access to source bibliographic data and other utilities for ILL purposes. BCLN already has an option to obtain access to the WLN system, but could investigate access to NL/DOBIS, OCLC, and RLIN as well as UTLAS. Most of these utilities have relaxed their participation agreements, to permit a greater sharing of information.

- search-only services for libraries in B.C. (not directly participating in BCLN) to access the BCLN databases.

- implementation of other applications outside of the software obtained from Biblio-Techniques. One notable application would be to implement the UBC Serials Management System for BCLN, providing a comprehensive serials support service. This could be full-use or simply search-only access. If the UBC Library software is installed on BCLN, this would also make available services such as the DRS, used to access uncatalogued literature including pamphlets, reports, etc. Also, if the current MARC records are stored on BCLN a current awareness service could be implemented.

- production of COM catalogues for libraries that continue to use UTLAS. This is now handled by the UBC Library for only two libraries; BCIT and VCC.

There are many different services which might be considered. Each will require consideration, and time to install, train staff, etc. The long range prospects for service offerings that will be of interest to libraries is extensive. The 'ability-to-pay' for these services, and the ability to deliver them and not lose money, are the key factors which must be paramount in determining which services BCLN is to offer.

6. PRICING OF SERVICES

The principle objectives for BCLN pricing should include the requirements to;

- apply a reasonable financial burden on library operations and services, yet provide the necessary incentive to use each service.

- generate sufficient revenues to sustain the BCLN operations, management and planning within a context of cost-recovery and not-for-profit.

- maintain a reasonable financial method for assigning costs as well as supporting BCLN functions and services. The combination of BCLN costs and revenues must also be considered with the goals and objectives for individual library services as well as the broader goal of resource sharing.

A further requirement is for BCLN to provide services that are competitive with other utilities, such as UTLAS.

The specific pricing formulas needed to achieve these goals will demand consultation and review from a management as well as user viewpoint in relation to the goals and objectives for BCLN. Meanwhile, it is necessary to employ some form of pricing method to project BCLN revenues and the costs for libraries. For this purpose a pricing method has been drafted, based on the WLN model and relative scale of charges, tailored to the level of revenues needed to sustain BCLN. The WLN model has been in use for some time and demonstrated to be workable. It can also be readily implemented on the BCLN facility since the WLN accounting package is available.

The prices and elements developed as a preliminary set of rates for cataloguing are as follows;

(a)	addition of a local holdings record to an existing bibliographic record	3.00 record
(b)	on-line input of a bibliographic record through a data entry process or directly on BLIS	1.50
(c)	inquiry functions - find, term, select, hold, key	.20 trans.
(d)	request for catalogue products (RCP)	.20
(e)	'check' command for validation of headings	.20 trans.
(f)	printed catalogue cards	.10 each
(g)	records on magnetic tape	.15 record

7. OPERATIONAL REQUIREMENTS

The operational requirements for BCLN are examined for the two alternatives for implementation identified earlier.

7.1 Using UVic Computing Centre

The staff required for computer operations is assumed to be included in the regular charges for use of the UVic computing facility.

BCLN staff are needed for the communications network, scheduling of production work, accounting and billing for BCLN services, and support for users in respect to training, trouble calls, and general assistance.

These various tasks would ideally be covered with appropriate specialists, however, for the outset, BCLN should have no difficulty in having two librarians with a limited technical background cover these requirements. A senior and junior librarian are proposed, such that one will be responsible for direction and supervision. This arrangement should be adequate while BCLN is servicing less than ten libraries. Beyond that it would be necessary to have more people, and probably some specialization.

Office space cost - 400 square feet at $ 600/yr	$	2,400
Senior Librarian		30,000
Librarian		24,000
Misc office s&e		8,000
Total	$	64,400
Avge. monthly	$	5,400

7.2 Using a dedicated BCLN computer

Operational staff is required for a dedicated computer as well as the office staff. Because of the larger operation, a Manager/Librarian is proposed and a clerical position.

OFFICE

Manager Librarian	40,000
Librarian	24,000
Clerical	12,000
Misc s&e	10,000
Office space - 500 square ft	$ 3,600
Subtotal	$ 89,600
Space for equipment, supplies and staff estimated at 1,200 sq ft at $6/yr	$ 7,200
Full time machine operator	25,000
Part time/hourly machine op.	15,000
Half time systems/programmer	17,000
Misc s&e - rough est.	8,000
Subtotal	$ 72,200
TOTAL	$ 161,800
estimated avge. monthly	$ 13,484

7.3 Start-up costs

There are some costs which must be covered for both alternatives, although the handling of some of these may vary with each implementation. Primarily, the start-up costs are related to completing the purchase of the BLIS software, acquiring some equipment needed for the communications network, loading the data bases (BCLN, CanMarc, current LC) and acquiring Marc source records retrospectively.

The cost items are as follows;

(1) Purchase BLIS software, $ 198,000 US at 25% exchange	$ 248,125
(2) Data communication equipment (covered in communications charges)	59,500
(3) Mini computer expansions (covered in communication charges)	20,000
(4) Data base loading	
- BCLN 750K @ $.12	$ 90,000
- Marc - CanMarc 180K @ .08	14,400
- LC 83 - 180K @ $.08	14,400
- LC 82 - 180K @ $.08	14,400
- LC 81 - 180K @ $.08	14,400
- CAN NAF 150K @ $.08	12,000
Subtotal	$ 69,600
(5) Retrospective MARC files purch. (see 3.5)	$ 3,520

Note - other data bases may also be necessary, such as LC NAF.

7.4 Cost of deferred financing for start-up costs

The start-up costs for BCLN will need to be financed and paid out over a period of time by applying a burden to the service charges for BCLN services. The cost for deferred financing is projected using University rates obtained from First City Capital Ltd. Three year and five year terms are considered, which is longer than the typical practice for business systems but is not unreasonable for BCLN since the system is expected to have a relatively long life.

3 yr, no residual, monthly payments;
$ 30.75 per month/per thousand
5 yr, no residual, monthly payments;
$ 21.50 per month/per thousand

A lower rate is possible if payments are made annually rather than monthly.

Purchase BLIS software for $ 248,125
over 5 yrs; 5,334.69 mo., incl prov tax 5,708.11 mo.

BCLN data base load cost of $ 90,000 (750K records)
over 5 yrs; 1,935.00 mo., incl prov tax 2,070.45 mo.

MARC retrospective data base load $ 69,600 (870K records)
over 5 yrs; 1,496.40 mo., incl prov tax 1,601.15 mo.

8. COST PROJECTIONS: UVIC COMPUTING SUPPORT

The projections of costs for the computing facility require estimates of workloads, number of libraries, terminals, etc. This demands that some assumptions be made on the libraries that will be participating and their volumes of work to be done on BCLN. For projection purposes, the following libraries and quantities have been used.

Library	Total	Orig.	Deriv.	Added
SFU	18,500	4,600	13,900	few
UBC	82,500	20,000	50,000	12,500
UVic	28,000	11,200	16,800	few
BCIT	14,800	8,400	6,400	few
KW	10,000	1,200e	8,800e	few
VCC	5,000	800	4,200	few
TOTAL ITEMS	158,800 year			
Average monthly	13,200			

Cost projections		Monthly
A. Fixed costs		
A.1	BLIS maintenance	4,300
A.2	Payment on BLIS purchase	5,709
A.3	Office	5,400
A.5	MARC records current - purch.	200
	load	2,200
A.5	Payment for retro data base loading	
	BCLN initial	2,071
	MARC	1,602
	SUBTOTAL	21,482
B. Variable costs		
B.1	Source records purch. (est.)	2,000
B.2	Computer charges for 13,200 items (at $ 1.912 per item)	25,238
B.3	Est. overhead re above 10%	2,500
B.4	Data base storage	10,000*
	* using IBM 3380 disc/5 gigabytes	
B.5	Communications	6,100
B.6	Extra commun. line to UVic	600
	SUBTOTAL	46,438
	OVERALL TOTAL	67,920

9. COST PROJECTIONS: BCLN COMPUTING FACILITY

The workloads and other assumptions made for the UVic alternative apply to the BCLN computer alternative also.

Hardware/Software

IBM 4361 configuration

Item	Purchase	Lease *	Maint.
4361 L04 (4meg)	210,485	4,999.03	767.50
3278 console	4,543	110.17	27.60
3262 printer	14,131	335.62	185.00
3380 AA4 disk/2.5 gig	120,904	2,871.47	520.00
3380 AA4 disk/2.5 gig	120,904	2,871.47	520.00
3880 disc contr	85,046	2,019.86	282.00
3430 tape & cont.	40,825	969.71	323.00
3430 tape	20,655	490.56	227.00
Subtotals	617,493	14,667.89	2,852.10
Software			
5740 AM6 Data fac/device supp		58.80	22.00
5652-VS1		n/c	n/c
5740 SM1 sort/merge		180.60	21.00
5740 UT3 data fac/data set serv		59.40	23.00
5734 LM5 OS/PL1 trans lib.		35.40	6.00
5662 257 OV/VS1 BPE		156.00	44.00
Subtotals		490.20	116.00
TOTALS		15,158.09	2,968.10
Prov tax		1,061.07	
Overall total			19,187.26

* Lease figures based on 5 yr IBM GTLA

Delivery and install etc.

Rough estimate only - incl purch of Marc retro $ 30,000.
over 5 yrs: 645.00 mo, incl prov tax 690.15 mo 691 mo

Summary of monthly costs for BCLN computing facility

FIXED COSTS	
BLIS maintenance	4,300
Payment on BLIS acq	5,709
Office	7,500
Marc records purch	200
Operations (staff, space)	13,484
Equipment lease IBM	19,200
Delivery/install etc.	691
Subtotal	51,084
VARIABLE COSTS	
Source records purch.	2,000
Communications (less extra Vic line)	6,100
Subtotal	8,100
Overall total	59,184

10. REVENUE PROJECTIONS

The following attempts to estimate the revenues from the initial participating libraries. There is a need for further work on these projections when the specific libraries participating are known and the workloads can be better estimated. For now, this provides an indication of the economics for the pricing schedule as well as for the two alternatives for implementing BCLN. No attempt has been made to obtain comparisons of UTLAS current costs for each library.

Schedule of prices for cataloguing on BCLN

Original	1.50
Derived	3.00
Cards	.10
Records	.15
Other trans	.20
Terminal charge	300.00

There are several sources for revenue which must be considered to obtain an economic feasibility for BCLN. Cataloguing is the obvious primary source and is probably more predictable than others. Although it is uncertain that libraries will have an "ability-to-pay" for some of the other services, it is important to identify the amounts as potential revenues and to examine BCLN in the long term as well as short. Only those services which can be implemented quickly on BLIS are projected, including;

- Cataloguing
- Pre-order searching
- ILL searching
- Acquisitions ordering
- Fund accounting

Projections for these appear in the following.

10.1 PROJECTED CATALOGUING REVENUES/SERVICE CHARGES

SFU LIBRARY

Original	4,600	6,900
Derived	13,900	41,700
Cards	37,000	3,700
Record/tape	18,500	2,775
Other trans. **	48,100	9,620
Terminals	3	10,800
Total		75,495
avge for 18,500		4.079

UBC LIBRARY

Original	20,000	30,000
Derived	50,000	150,000
Added	12,500	37,500
Cards	330,000	33,000
Records on tape	82,500	12,375
Other trans	214,500	42,900
Terminals	10	36,000
Total		341,775
avge for 82,500		4.142

UVIC LIBRARY

Original	11,200	16,800
Derived	16,800	50,400
Cards	168,000	16,800
Records on tape	28,000	4,200
Other trans	72,800	14,560
Terminals	3	10,800
Total		113,560
avge for 28,000		4.055

** note re other trans - calculated on mix from benchmark tests; 2.6 times total items. charged at .20 trans.

10.1 PROJECTED CATALOGUING REVENUES/SERVICE CHARGES (CONT'D)

BCIT LIBRARY

Original	8,400	12,600
Derived	6,400	19,200
Cards	14,800	1,480
Records on tape	14,800	2,220
Other trans **	38,480	7,696
Terminals	1	3,600
Total		46,796
avge for 14,800		3.161

KWANTLEN COLLEGE LIBRARY

Original	1,200	1,800
Derived	8,800	26,400
Cards	10,000	1,000
Records on tape	10,000	1,500
Other trans.	26,000	5,200
Terminals	2	7,200
Total		43,100
avge for 10,000		3.169

VANCOUVER COMMUNITY COLLEGE LIBRARY

Original	800	1,200
Derived	4,200	12,600
Cards	5,000	500
Records on tape	5,000	750
Other trans.	13,000	2,600
Terminals	2	7,200
Total		24,850
avge for 5,000		4.968

** note re other trans - calculated on mix from benchmark tests; 2.6 times total items. charged at .20 trans.

SUMMARY OF CATALOGUING REVENUES/SERVICE CHARGES

BY TYPE OF SERVICE/CHARGE	REVENUE
Original 46,200	69,300
Derived/added 112,600	337,800
Cards 564,800	56,480
Records 158,800	23,820
Other trans 412,880	82,576
Terminals 21	75,600
TOTALS	645,576
Average for 158,800	4.065

BY LIBRARY

	REVENUE	ITEMS	AVGE.
SFU	75,495	18,500	4.079
UBC	341,775	82,500	4.142
UVIC	113,560	28,000	4.055
BCIT	46,796	14,800	3.161
KW	43,100	10,000	3.169
VCC	24,850	5,000	4.968
TOTALS	645,576	158,800	4.065

10.2 PREORDER SEARCHING

SFU	18,500
UBC	82,500
UVIC	28,000
BCIT	14,800
KW	10,000
VCC	5,000
TOTAL	158,800 x2 searches at $ .20

Estimated revenues 63,520

Note - the above is based on titles catalogued - which may overestimate quantity of preorder searching activity.

10.3 ILL SEARCHING

Stats for each library not available.

Estimated revenues not determined.

10.4 ACQUISITIONS ORDERING

SFU	18,500
UBC	82,500
UVIC	28,000
BCIT	14,800
KW	10,000
VCC	5,000
TOTAL	158,800 at 1.00 per order

Estimated revenues 158,800

10.5 FUND ACCOUNTING

Stats for each library not available

Estimated revenue not determined

SUMMARY OF PROJECTED REVENUES

Cataloguing	645,576	
Preorder searching	63,520	
ILL searching	n/a.	
Acquisitions ordering	158,800	
Fund accounting	n/a	
TOTAL		867,896

SUMMARY OF ANNUAL ESTIMATED EXPENDITURES - UVIC ALTERNATIVE

BCLN office	64,800
BLIS purchase payment	68,508
BLIS maintenance	51,600
Communications	80,400
Computer time UVIC - on line operations	332,856
Disc storage 5 gigabytes	120,000
Marc current record purchase	2,400
Marc current record load	26,400
Source record purch on demand	24,000
BCLN load defer payment	24,852
MARC retro load defer pay	19,224
Total	815,040
overall avge cost : 158,800 items	5.132

SUMMARY OF ANNUAL ESTIMATED EXPENDITURES - BCLN COMPUTER

BCLN office	90,000
BLIS purchase payment	68,508
BLIS maintenance	51,600
Communications (less extra UVic line)	73,200
Computer lease cost incl disc stor	230,400
Deliver/install - defer pay 5 yrs	8,292
Operations staff etc	156,800
Marc current record purch	2,400
Source record purch on demand	24,000
Total	705,200
overall avge cost : 158,800 items	4.44

11. DISCUSSION OF FEASIBILITY

It is clear that cataloguing as the only application on BCLN will not generate sufficient revenues to make BCLN economically feasible with either of the implementation alternatives unless the unit charges are increased significantly. The objective that BCLN be competitive with UTLAS would not support a move to increased charges, even with a better system, and this should not be considered. This doesn't require that BCLN be less expensive than UTLAS, but usage cost should be very close, probably within a few percent.

Although the revenues as projected would make BCLN viable, there is a need to determine which libraries can and will participate, and to what extent. The current budget restraint processes will hamper the 'ability to pay' even though there is a strong interest in using the services identified.

In addition to the question of what services and at what level, there is also a need to consider the scheduling for implementation and when revenues will be realized. Unless some 'holiday' can be negotiated with IBM or whoever finances BCLN, there will be an initial period when there will be expenses that exceed revenues, creating a need for working capital almost as soon as BCLN begins.

The long term revenue/cost picture for BCLN appears to be sound in that there are many services which can be implemented and a number of libraries that are interested. This will continue to be the case so long as BLIS and BCLN provides better services for comparable cost. The development planning existing at WLN is well organized and funded. Other users of the WLN system are also developing the system. These two factors indicate that BLIS should continue to be developed and retain its position compared with other systems.

Of the two alternatives considered for BCLN implementation, the UVic alternative is the less attractive, and one which may not be viable. The cost for operating the additional services of Acquisitions and Fund Accounting were not determined during Phase 1, and there is no other way of determining these costs accurately. In addition, the UVic alternative suffers by comparison with the BCLN computer by the incremental cost of computer time - as usage increases then the cost also increases.

In contrast, the BCLN computer provides a capacity to support additional usage or applications without incremental costs until the overall capacity of the computer is reached. This is an important factor to consider in planning, and if ignored can have disastrous results. However, it also provides the opportunity to provide additional services with the computer proposed because there will be extra capacity to do so. Alternatively, the extra capacity could be used to implement more users on BCLN. This

choice will have to be made by the participants.

The question of feasibility of BCLN must consider plans and developments at UTLAS, but at this time it is not possible to predict what redevelopment of the UTLAS system will provide in terms of services or costs. Plans have been announced for a major change in central hardware/software, which will be completed sometime in 1984 if their schedules are met. Just what this redevelopment will do to their service offerings and their charges is not known at this time and will not be known for some time. It seems unlikely that UTLAS costs will go down, and more likely that they will be increased on the basis that services are better or more comprehensive. This has been the past experience.

The BLIS system was demonstrated to be superior to UTLAS in a number of ways, and also feasible to implement if there are sufficient libraries participating. BCLN services can be evaluated right now; UTLAS services can only be speculated.

UTLAS will need to give a high priority in their redevelopment effort to maintaining the existing services.... although their new development may provide potential for a better system, it is not known when that will occur or at what cost.

The conclusion reached is to recommend that BCLN should proceed to implementation because it will provide additional as well as better services; is economically viable; and has at least as much prospect for future improvement as UTLAS.

There is also a greater potential with BLIS to provide additional services and to generate increased revenues in order to improve the financial viability of BCLN. This may also permit reduced charges for services.

The question of proceeding with BCLN is, however, mainly a financial one, and quite specifically dependant upon the number of participants and their ability of pay for services wanted. The participating library directors considered the question of proposing the continued implementation of BCLN, and decided that it was not feasible to put forward any proposals asking for more money, and not reasonable to expect that each library would be certain to continue operations and spending at the same level in 1984/85. Rather, most agreed that they would likely be examining ways to reduce expenditures and would need to look at ways and means to reduce costs, perhaps with some local or in-house solutions.

The participants agreed that BCLN could not proceed because of financial uncertainty. Requesting capital funding for BCLN seemed inappropriate at this time for the same reasons.

12. MANAGEMENT REQUIREMENTS

There was some discussion and study of BCLN management requirements during the Phase 1 period, but no specific solutions were determined. This was set aside pending the question of feasibility with the assumption that a management solution would be determined if BCLN proceeds to full implementation.